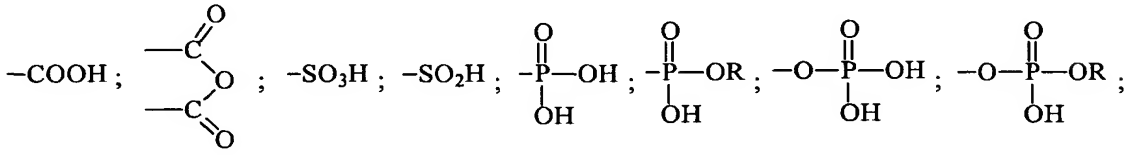
1. A method for providing a dental composition comprising

providing a paste/paste two-part self-adhering dental composition comprising

(a) at least one acidic compound containing at least one acidic moiety selected from the group consisting of



where R is an alkyl or aryl group;

(b) at least one polymerizable monomer without any acidic group where the polymerizable group is selected from the group consisting of an acrylate, a methacrylate and a vinyl group;

(c) at least one finely divided filler;

(d) at least one reducing agent; and

(e) at least one oxidizing agent;

providing instructions for mixing the two pastes and applying the mixed composition to a dental substrate wherein the ratio of a first paste containing (a) or a higher concentration of (a) to a second paste not containing (a) or containing a lower concentration of (a) is greater than 1:1 (by volume).

2. The method of claim 1 further comprising mixing the two pastes, applying the mixed composition to a dental substrate, and hardening the composition inside a patient's mouth.

3. The method of claim 1 wherein the composition further comprises at least one component selected from the group consisting of a photo-initiator, a stabilizer, a solvent, and combinations thereof.

4. The method of claim 1 wherein the filler is selected from the group consisting of inorganic metal, salt, oxide, nitride, silicate glass, aluminosilicate glass, aluminoborosilicate glass, fluoroaluminosilicate glass, quartz, colloidal silica, precipitated silica, zirconia-silica, polymeric filler, polymerized composite filler with inorganic particles, and combinations thereof.

5. The method of claim 4 wherein the metal, salt, oxide, silicate glass, aluminosilicate glass, aluminoborosilicate glass, and fluoroaluminosilicate glass contains an element selected from the group consisting of Sr, Y, Zr, Ba, La, Hf, Zn, Bi, W, a rare earth metal, and combinations thereof.

6. The method of claim 3 wherein the solvent is selected from the group consisting of water, acetone, methanol, ethanol, isopropanol, ethylene glycol, glycerin, or combinations thereof.

7. The method of claim 1 wherein the acidic compound is a polymerizable monomer with at least one ethylenically unsaturated group selected from the group consisting of an acrylate, a methacrylate and a vinyl group.

8. The method of claim 7 wherein the acidic polymerizable monomer contains at least one phosphate group.

9. The method of claim 7 wherein the acidic polymerizable monomer is selected from the group consisting of HEMA-P, GDM-P, Bis(HEMA)-P, MDP, phenyl-P, PENTA-P, or combinations thereof.

10. The method of claim 1 wherein the acidic compound is a homopolymer or copolymer of an α,β-unsaturated carboxylic acid.

11. The method of claim 10 wherein the α,β-unsaturated carboxylic acid is selected from the group consisting of acrylic acid, methacrylic acid, maleic acid, and itaconic acid.

12. The method of claim 10 wherein the acid homopolymer or copolymer contains at least one ethylenically unsaturated group selected from the group consisting of an acrylate, a methacrylate, and a vinyl group.

13. The method of claim 1 wherein the oxidizing agent is selected from the group consisting of a tertiary hydroperoxide compound with at least one hydroperoxide group attached to at least one tertiary carbon, Cu(II) salt, Fe(III) salt, Co(III) salt, persulfate salt, permanganate salt, and combinations thereof.

14. The method of claim 1 wherein the oxidizing agent is a tertiary hydroperoxide selected from the group consisting of t-butyl hydroperoxide, t-amyl hydroperoxide, p-diisopropylbenzene hydroperoxide, cumene hydroperoxide, pinane hydroperoxide, p-methane hydroperoxide, 1,1,3,3-tetramethylbutyl hydroperoxide, and combinations thereof.

15. The method of claim 1 wherein the reducing agent is selected from the group consisting of aromatic sulfinate salt, aliphatic sulfinate salt, thiourea, substituted thiourea, ascobic acid, ascorbic acid derivative and salt, Fe(II) salt, Cu(I) salt, Co(II) salt, barbituric acid, barbituric acid derivative and salt, thiobarbituric acid, thiobarbituric acid derivative and salt, and combinations thereof.

16. The method of claim 1 wherein the reducing agent is a substituted thiourea selected from the group consisting of 1-(2-pyridyl)-2-thiourea, 1-acetyl-2-thiourea, and 1-(2-tetrahydrofufuryl)-2-thiourea.

17. The method of claim 1 wherein a first paste comprises the oxidzing agent and a second paste comprises the reducing agent.

18. The method of claim 1 wherein one paste comprises an initiator system selected from the group consisting of a reducing agent and an encapsulated oxidizing agent, an oxidizing agent and an encapsulated reducing agent, and an encapsulated oxidizing agent and an encapsulated reducing agent.

19. The method of claim 1 wherein the dental substrate is selected from the group consisting of dentine, enamel, dental metal alloy, and porcelain.

20. The method of claim 1 wherein the dental composition is selected from the group consisting of a restorative composition, an orthodontic composition, and an endodontic composition.

21. The method of claim 1 wherein the dental composition is selected from the group consisting of a dental filling composition, a cement composition, a base/liner composition, a pit/fissure sealant composition, and an adhesive composition.

22. The method of claim 1 wherein the dental composition is a cement composition.

23. The method of claim 1 wherein the paste/paste two-part self-adhering dental composition is provided from a prepackaged container(s).

24. The method of claim 1 wherein the first paste is in a first syringe barrel and the second paste is in a second syringe barrel, the first and second syringes selected from group consisting of two non-joining individual syringes and one dual-syringe assembly.

25. The method of claim 24 wherein the ratio of an internal cross-sectional area of the first syringe barrel containing the first paste to the second syringe barrel containing the second paste is in the range of 1.05:1 (by volume) to about 20:1 (by volume).

26. The method of claim 25 wherein the relative ratio is in the range of about 2:1 (by volume) to about 10:1 (by volume).

27. The method of claim 24 wherein a static mixer with an exit opening is attached to exit openings of the dual-syringe to dispense a substantially homogeneous mixed paste.

28. The method of claim 1 wherein the first and second pastes are packaged in single-dose form without contact between the first and second pastes and the ratio of the first paste to the second paste is in the range between 1.05:1 (by volume) to about 20:1 (by volume).

29. The method of claim 1 wherein mixing is by a method selected from the group consisting of manual mixing, use of an automated mixing device, and use of a static mixer.

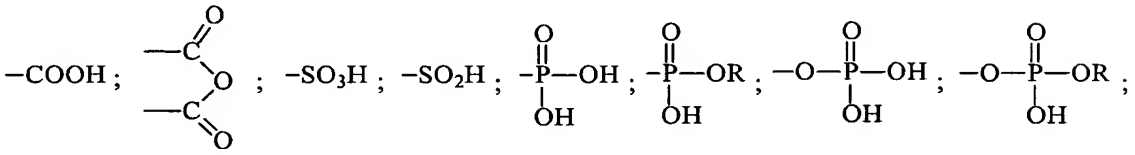
30. The method of claim 1 wherein the ratio of the first paste to the second paste is in the range between about 2:1 (by volume) to about 10:1 (by volume).

31. The method of claim 1 wherein the mixed composition has a bond strength to an unetched and unprimed dentine substrate selected from the group consisting of at least 3 MPa, at least 5 MPa, and at least 6 MPa.

32. The method of claim 1 wherein a total concentration of the at least one acidic compound excluding the filler is selected from the group consisting of at least 10% (w/w), at least 15% (w/w), and at least 20% (w/w).

33. A method for providing a dental composition comprising providing a paste/paste two-part self-adhering dental composition, a first paste comprising

(a) at least one acidic compound containing at least one acidic moiety selected from the group consisting of



where R is an alkyl or aryl group;

(b) at least one polymerizable monomer without any acidic group where the polymerizable group is selected from the group consisting of an acrylate, a methacrylate and a vinyl group;

(c) at least one finely divided filler;

(d) at least one oxidizing agent;

and a second paste comprising

(e) at least one polymerizable monomer without any acidic group which is either the same as (b) or different from (b) where the polymerizable group is selected from the group consisting of an acrylate, a methacrylate and a vinyl group;

(f) at least one finely divided filler which is either the same as (c) or is different from (c);

(g) at least one reducing agent;

providing instructions for mixing the two pastes and applying the mixed composition to a dental substrate wherein the ratio of the first paste to the second paste is greater than 1:1 (by volume).

34. The method of claim 33 wherein the composition is mixed, applied to the dental substrate, and hardened inside a patient's mouth.

35. The method of claim 33 wherein the composition further comprises at least one component selected from the group consisting of a photo-initiator, a stabilizer, a solvent, and combinations thereof.

36. The method of claim 33 wherein the filler is selected from the group consisting of inorganic metal, salt, oxide, nitride, silicate glass, aluminosilicate glass, aluminoborosilicate glass, fluoroaluminosilicate glass, quartz, colloidal silica, precipitated silica, zirconia-silica, polymeric filler, polymerized composite filler with inorganic particles, and combinations thereof.

37. The method of claim 36 wherein the metal, salt, oxide, silicate glass, aluminosilicate glass, aluminoborosilicate glass, and fluoroaluminosilicate glass contains an element selected from the group consisting of Sr, Y, Zr, Ba, La, Hf, Zn, Bi, W, a rare earth metal, and combinations thereof

38. The method of claim 35 wherein the solvent is selected from the group consisting of water, acetone, methanol, ethanol, isopropanol, ethylene glycol, glycerin, or combinations thereof.

39. The method of claim 33 wherein the acidic compound is a polymerizable monomer/polymer with at least one ethylenically unsaturated group selected from the group consisting of an acrylate, a methacrylate, and a vinyl group.

40. The method of claim 39 wherein the acidic polymerizable monomer/polymer contains at least one phosphate group.

41. The method of claim 33 wherein the acidic compound is homopolymer or copolymer of an α,β-unsaturated carboxylic acid.

42. The method of claim 33 wherein the oxidizing agent is selected from the group consisting of a tertiary hydroperoxide compound with at least one hydroperoxide group attached to at least one tertiary carbon, Cu(II) salt, Fe(III) salt, Co(III) salt, persulfate salt, permanganate salt, and combinations thereof.

43. The method of claim 33 wherein the oxidizing agent is a tertiary hydroperoxide selected from the group consisting of t-butyl hydroperoxide, t-amyl hydroperoxide, p-diisopropylbenzene hydroperoxide, cumene hydroperoxide, pinane hydroperoxide, p-methane hydroperoxide, 1,1,3,3-tetramethylbutyl hydroperoxide, and combinations thereof.

44. The method of claim 33 wherein the reducing agent is selected from the group consisting of aromatic sulfinate salt, aliphatic sulfinate salt, thiourea, substituted thiourea, ascobic acid, ascorbic acid derivative and salt, Fe(II) salt, Cu(I) salt, Co(II) salt, barbituric acid, barbituric acid derivative, thiobarbituric acid, thiobarbituric acid derivative and salt, and combinations thereof.

45. The method of claim 33 wherein the reducing agent is a substituted thiourea selected from the group consisting of 1-(2-pyridyl)-2-thiourea, 1-(2-tetrahydrofufuryl)-2-thiourea, and 1-acetyl-2-thiourea.

46. The method of claim 33 wherein the dental composition is selected from the group consisting of a restorative composition, an orthodontic composition, or an endodontic composition.

47. The method of claim 33 wherein the dental composition is selected from the group consisting of a dental filling composition, a cement composition, a base/liner composition, a pit/fissure sealant composition, and an adhesive composition.

48. The method of claim 33 wherein the paste/paste two-part self-adhering dental composition is provided from a prepackaged container(s).

49. The method of claim 33 wherein the first paste is in a first syringe barrel and the second paste is in a second syringe barrel, the first and second syringes selected from group consisting of two non-joining individual syringes and one dual-syringe assembly.

50. The method of claim 49 wherein the ratio of an internal cross-sectional area of the first syringe barrel containing the first paste to the second syringe barrel containing the second paste is in the range of 1.05:1 (by volume) to about 20:1 (by volume).

51. The method of claim 50 wherein the relative ratio is in the range of about 2:1 (by volume) to about 10:1 (by volume).

52. The method of claim 49 wherein a static mixer with an exit opening is attached to exit openings of the dual-syringe to dispense a substantially homogeneous mixed paste.

53. The method of claim 33 wherein the first and second pastes are packaged in single-dose form without contact between the first and second pastes and the ratio of the first paste to the second paste is in the range between 1.05:1 (by volume) to about 20:1 (by volume).

54. The method of claim 33 wherein mixing is by a method selected from the group consisting of manual mixing, use of an automated mixing device, and use of a static mixer.

55. The method of claim 33 wherein the ratio of the first paste to the second paste is in the range between about 2:1 (by volume) to about 10:1 (by volume).

56. The method of claim 33 wherein the mixed composition has a bond strength to an unetched and unprimed dental substrate selected from the group consisting of at least 3 MPa, at least 5 MPa, and at least 6 MPa.

57. The method of claim 33 wherein a total concentration of the at least one acidic compound excluding the filler is selected from the group consisting of at least 10% (w/w), at least 15% (w/w), and at least 20% (w/w).